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Maximum of eclipse:
Berkeley, May 28th, $5^h 37^m 35^s$ A. M., P. S. T.
San Francisco, May 28th, $5^h 37^m 31^s$ A. M., P. S. T.
End of eclipse:
Berkeley, May 28th, $6^h 27^m 40^s$ A. M., P. S. T.
San Francisco, May 28th, $6^h 27^m 36^s$ A. M., P. S. T.
Greatest obscuration:
Berkeley, 0.5104.
San Francisco, 0.5107.
Position-angle of fourth contact:
Berkeley, $107^\circ 46'.3$
San Francisco, $107^\circ 46'.1$.

The amount of obscuration indicates that the Moon will cover a little more than half the Sun's diameter.

STTDENTS' OBSERVATORY,
UNIVERSITY OF CALIFORNIA, March 23, 1900.

PLANETARY PHENOMENA FOR MAY AND JUNE, 1900.

By MALCOLM McNEILL.

MAY.

Eclipse.— There will be a total eclipse of the Sun on the morning of May 28th. The total eclipse begins at sunrise in the Pacific off the coast of Mexico, and the line of totality crosses the United States from Louisiana to Virginia; thence crossing the Atlantic to Spain; thence through Spain and North Africa to Egypt, where it ends at sunset. Unfortunately, the duration of totality is short — less than two minutes from any land station where it can be seen. It will be visible as a partial eclipse throughout the United States.

Mercury is a morning star until May 29th, when it passes superior conjunction and becomes an evening star, but is not far enough away from the Sun to be easily visible at any time during the month.

Venus having passed greatest east elongation in April, has now begun to approach the Sun, and the distance lessens about 5° during the month; the interval also between sunset and the setting of the planet shortens from about four to about three hours. It moves westward among the stars about 26° during the month, to a point in *Gemini* a few degrees south of *Castor and Pollux*. It reaches greatest brilliancy about the end of the month, and throughout the month will be bright enough to be seen in full daylight in clear weather.

Mars is increasing its apparent distance from the Sun, and by the end of the month rises about an hour and a half before sunrise, so that it may be seen in the early morning twilight under good weather conditions; but it will not be at all conspicuous.

Jupiter rises earlier, before sunset, toward the close of the month, and is getting into good position for evening observation. It is in opposition with the Sun on May 27th. It moves westward about 4° in the constellation *Scorpio*, and on May 31st is in almost the same position it held on January 26th.

Saturn rises at about 9 P.M on May 31st. It moves westward about 2° in *Sagittarius* during the month, and at the end of the month it is in about the same position it occupied at the end of February. It is following in its retrograde motion even more closely than did *Jupiter* the path it marked out during its forward (or eastward) motion. Sometimes the retrograde motion of these planets is along a path which makes quite a loop with the forward motion.

Uranus is still near *Jupiter*, but rather farther away than during April. By the end of the month it is 5° east and 1° 38′ south of *Jupiter*. It moves a little more than 1° westward during the month in the constellation *Scorpio*.

Neptune is still in the extreme eastern part of *Taurus*, near *Gemini*, and moves about 1° eastward during the month.

JUNE.

Eclipse.— There will be a partial eclipse of the Moon on the night of June 12–13th, visible throughout the United States. The fraction of the Moon's diameter which will be obscured is only 0.001, so that it is a very partial eclipse indeed, and will scarcely be detected without careful instrumental measurement. Naked-eye observations will hardly be able to detect anything unusual about the Moon. However, the eclipse is perhaps interesting from the fact that its occurrence is all that saves the year 1900 from having the minimum possible number of eclipses

— two of the Sun (there will be another eclipse of the Sun in November), as happened in 1886, and will happen again in 1904.

The Sun is at its solstice, and summer begins June 21st, 1 P.M., P. S. T.

Mercury is an evening star throughout the month, and after the first week of the month remains above the horizon an hour or more after sunset. At the end of the month the interval is more than an hour and a half. It is, therefore, in very good position for evening observation. On June 13th it passes only 3′ south of the third magnitude star ϵ *Geminorum*. The time of nearest approach occurs during daylight in this country, and the motion of the planet will cause the apparent distance to be about equal to the Moon's diameter by the time the stars become visible in the evening.

Venus is an evening star, but is rapidly approaching the Sun, so that the interval between sunset and the setting of the planet shortens from three hours, on June 1st, to about half an hour, on June 30th. It moves eastward about 4° among the stars until June 15th, and then moves westward about the same amount, but all the time moving southward, so that it does not retrace its course by several degrees.

Mars rises an hour earlier than during May, and moves 22° east and 6° north through *Aries* into *Taurus*. Towards the end of the month it is about 5° south of the *Pleiades*, and will be an easy object to see, although not conspicuous.

Jupiter is well up at sunset, and remains above the horizon until nearly morning. It moves 3° westward and a little north in the constellation *Scorpio*, and at the end of the month is less than half a degree east and south of β *Scorpii*.

Saturn is above the horizon practically the entire night, and comes to opposition with the Sun on June 23d. It moves about 2° westward in *Sagittarius*, and is just north of the Dipper handle in that constellation. There is a close conjunction of *Saturn* and the Moon on the evening of June 13th, close enough for an occultation in some parts of the world. As seen in the telescope, the apparent breadth of the rings is just about as it was during the opposition of 1899, very near the maximum.

Uranus is still in the neighborhood of *Jupiter*, a little farther away than during May, the average distance being about 6° east and 2° south.

Neptune is moving slowly eastward in the extreme eastern part of *Taurus*.

MAY-JUNE, 1900.

PHASES OF THE MOON, P. S. T.

			H. M.
First Quarter,	May	6,	5 39 A.M.
Full Moon,	May	14,	7 37
Last Quarter,	May	21,	12 31 P.M.
New Moon,	May	28,	6 50 A.M.
First Quarter,	June	4,	10 59 P.M.
Full Moon,	June	12,	7 38
Last Quarter,	June	19,	4 57
New Moon,	June	26,	5 27

THE SUN.

1900	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
May 1,	2 33	+ 15 1	5 5 A.M.	11 57 A.M.	6 49 P.M.
11,	3 11	+ 17 50	4 53	11 56	6 59
21,	3 51	+ 20 9	4 44	11 56	7 8
June 1,	4 36	+ 22 2	4 39	11 58	7 17
11,	5 17	+ 23 5	4 36	11 59	7 19
21,	5 58	+ 23 27	4 36	12 1 P.M.	7 26.
July 1,	6 40	+ 23 8	4 40	12 4	7 28

MERCURY.

1900	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
May 1,	1 1	+ 3 25	4 14 A.M.	10 25 A.M.	4 36 P.M.
11,	1 58	+ 9 36	4 10	10 43	5 16
21,	3 10	+ 16 44	4 17	11 15	6 13
June 1,	4 47	+ 23 20	4 45	12 9 P.M.	7 33
11,	6 18	+ 25 20	5 27	1 1	8 35
21,	7 35	+ 23 27	6 13	1 38	9 3
July 1,	8 30	+ 19 31	6 44	1 53	9 2

VENUS.

1900	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
May 1,	5 43	+ 26 51	7 26 A.M.	3 7 P.M.	10 48 P.M.
11,	6 23	+ 26 53	7 27	3 8	10 49
21,	6 58	+ 26 6	7 27	3 4	10 41
June 1,	7 28	+ 24 33	7 19	2 49	10 19
11,	7 42	+ 22 48	7 2	2 24	9 46
21,	7 42	+ 20 59	6 29	1 44	8 59
July 1,	7 25	+ 19 18	5 40	12 48	7 56

Mars.

May 1,	1 8	+ 6 17	4 11 A.M.	10 32 A.M.	4 53 P.M.
11,	1 36	+ 9 12	3 49	10 21	4 53
21,	2 4	+ 11 55	3 29	10 10	4 51
June 1,	2 36	+ 14 41	3 7	9 58	4 49
11,	3 5	+ 16 56	2 48	9 47	4 46
21,	3 34	+ 18 53	2 30	9 37	4 44
July 1,	4 4	+ 20 32	2 14	9 27	4 40

Jupiter.

May 1,	16 30	— 20 55	9 11 P.M.	1 56 A.M.	6 41 A.M.
June 1,	16 15	— 20 21	6 47	11 34 P.M.	4 21
July 1,	16 1	— 19 49	4 33	9 23	2 13

Saturn.

May 1,	18 21	— 22 20	11 7 P.M.	3 46 A.M.	8 25 A.M.
June 1,	18 14	— 22 24	8 59	1 38	6 17
July 1,	18 5	— 22 28	6 48	11 27 P.M.	4 6

Uranus.

May 1,	16 41	— 22 9	9 26 P.M.	2 6 A.M.	6 46 A.M.
June 1,	16 36	— 21 59	7 14	11 55 P.M.	4 36
July 1,	16 31	— 21 49	5 10	9 52	2 34

Neptune.

May 1,	5 39	+ 22 9	7 46 A.M.	3 6 P.M.	10 26 P. M.
June 1,	5 43	+ 22 12	5 45	1 5	8 25
July 1,	5 48	+ 22 14	3 52	11 12 A.M.	6 32

ECLIPSES OF *JUPITER'S* SATELLITES, P. S. T.

(Off left-hand limb as seen in an inverting telescope to May 27th, then off right.)

		H. M.			H. M.
I, D,	May 5,	8 27 P.M.	III, R,	June 1,	12 52 A.M.
I, D,	8,	12 41 A.M.	I, R,	1,	9 28 P.M.
I, D,	9,	7 9 P.M.	II, R,	6,	10 32
I, D,	15,	2 34 A.M.	I, R,	8,	11 22
I, D,	16,	9 3 P.M.	I, R,	10,	5 50
II, D,	20,	1 37 A.M.	II, R,	14,	1 9 A.M.
I, D,	21,	4 28	I, R,	16,	1 16
I, D,	24,	12 57	I, R,	24,	9 39 P.M.
III, D,	24,	7 8 P.M.			
I, D,	25,	5 25			
II, D,	27,	4 13 A.M.			
II, R,	30,	7 56 P.M.			
I, R,	31,	2 59 A.M.			